our haste we impose Western conceptions of justice . . . on people who are still in the clan-stage of society, our judgments seem to such people absurdly unjust, and even pernicious. . . . There are few things the old people grumble about so much as the way the proximity of Europeans, with their new-fangled ideas of justice, undermines the characters of young Kafirs. In olden days there were regular courts of investigation, consisting of a dozen old women of the kraal. All the girls were medically examined by these women before and after large dances; and thus certain forms of vice were impossible as they would be so speedily detected. Nowadays the young women will not submit to such examination, and threaten to complain to the nearest magistrate when it is suggested. Consequently, so the old people say, ancient restraints have been removed, and no new ones have been substituted by white men. The result is disastrous. . . ."

"The case of 'mixed bathing' of the children is another example of a somewhat similar thing. According to Western conceptions of morality this practice is indelicate and liable to lead to immorality. So missionaries advised natives to abandon it. The natives now declare that the abandonment of this custom has led to an increase of immorality, and say that it introduces new vices amongst the people."

Mr. Kidd is not the only author who has pointed out the injury to health and to morals inflicted on native races by forcing upon them European ideas and customs. People know too little of anthropology and of evolution. They are not aware that the practices, which are as second nature to themselves, have only become so by a course of selective action through thousands of years, and that to force changes on natives whose course of evolution has been so different is almost certain to be disastrous. Changes take time; Nature will not be hurried; and it is particularly necessary to understand, not only the native customs, but the reasons which have determined them. As a contribution to this end, a work with many interesting observations and a considerable array of facts, Mr. Kidd's book may be commended.

ANNIVERSARY MEETING OF THE ROYAL SOCIETY.

THE anniversary meeting of the Royal Society was held as usual on St. Andrew's Day, November 30, when the report of the council was presented, the presidential address was read, and the new council already announced (p. 36) for the ensuing year was elected. The annual dinner was held in the evening at the Hôtel Métropole, the chair being taken by Sir William Huggins, K.C.B., in the absence of the president, Lord Rayleigh, owing to illness.

The main features of the activity of the Royal Society during the session 1905–6 are described in the report of the council. Among other subjects referred to is the preparation of the reports on the scientific results obtained by the late National Antarctic Expedition. The council has decided that these reports shall be published in quarto form, uniform with the Philosophical Transactions and the *Challenger* publications.

In May last the council learned that the funds (36,000*l.*) provided by the British South Africa Company for the South African meridian arc had been exhausted. The arc had been extended beyond the Zambezi towards Lake Tanganyika, but a gap of 120 miles existed in the middle of it. It was estimated that 1600*l.* was required to fill this gap, and the matter was most urgent in view of the pending disbandment of the surveying parties. The officers had intimated by authority from the president that the Royal Society would probably be able to subscribe 300*l.* from its private funds on condition that the remainder of the money required were provided; and, on the strength of this information, Sir G. Darwin obtained a promise of 800*l.* from the British South Africa Company, 100*l.* from the Royal Geographical Society, 100*l.* from Wernher, Beit and Co., and cabled to Sir D. Gill that the surveying party was to proceed, thus assuming responsibility for the remaining 300*l.* This 300*l.* has since been subscribed by the British Association from its special South African fund.

The council of the International Association of Academies met in Vienna at the end of May last, Prof. Schuster attending as representative of the Royal Society. Two proposals submitted by the society received considerable support. Regarding one of these, which aims at the establishment of a uniform lunar nomenclature, the council resolved to recommend to the general assembly of the association the appointment of a committee to consider the subject. The proposal that the association should allow itself to be placed at the head of the bodies constituting the International Union for Solar Research was considered, and, while sympathy was expressed with the wishes of the Solar Union, the council felt a difficulty in recommending a scheme that might involve the association in responsibilities which it had no legal power to incur. Prof. Schuster undertook to bring the matter forward again next year in a modified form.

On the suggestion of the Academy of Sciences of Paris, the council agreed to recommend a scheme for the organisation of meteorological stations at different points of the earth's surface.

The subject of international cooperation in the reduction and standardisation of seismological observations has engaged the attention of the council. In accordance with the decision of the International Association of Academies, the proposition made by the German Government and referred to in the last report of the council has, during the present year, been carried into effect. The conditions suggested to the Treasury by the Royal Society, on which the concurrence of this country should be given, have been fulfilled. Both the Governments of France and the United States agreed to send representatives to the first meeting of the permanent commission of the International Seismic Association, and on the recommendation of the council Prof. Schuster was deputed by the Treasury to attend that meeting as delegate from this country. The various representatives of the different countries which agreed to take part in the operations and deliberations of the commission met in Rome on October 16 last. The chief business of this meeting was the organisation of the work of the association. One of the principal results of the discussion was a resolution to use a portion of the funds at the disposal of the association for the establishment of a seismological station in the Arctic regions. The permanent commission is to meet every two years, and the first general meeting of the association has been arranged to be held next year.

The progress of the Indian magnetic survey, under the direction of Major H. A. D. Fraser, R.E., is reported from time to time to the observatories' committee of the society. Preparations are also in progress for the reduction and publication of the very long series of magnetic records accumulated at Bombay, under the superintendence of Mr. Moos, the director of the observatory.

A magnetic survey of South Africa has been in progress for some years, under the direction of Prof.

Beattie, of Cape Town, and the field work is now practically completed. In reply to a request that the results might be published under the auspices of the Royal Society, the council willingly expressed its assent, as uniformity would thereby be secured with the British survey executed by Rücker and Thorpe, and with the magnetic surveys, in which the Royal Society is concerned, proceeding in other parts of the Empire. The council agreed to undertake the publication of a separate volume, uniform with the Philosophical Transactions, on condition that the expenses were repaid by the Colonial Government concerned. The society has since been officially informed that the sum of 600*l.* is held by the Public Works Department at Cape Town to meet the expenses of publication of the magnetic survey of South Africa.

The council has also taken steps to secure that the magnetic survey of New Zealand, now nearly completed, under the direction of Dr. Coleridge Farr, and to be published by the Government of New Zealand, shall appear in a form uniform so far as possible with the above.

In the absence of the president, Lord Rayleigh, the presidential address, which is reprinted below almost in its complete form, was read at the anniversary meeting by Mr. A. B. Kempe, treasurer and vice-president of the society.

In the report of the council there has been laid before you an account of the work of the council and of various committees in a very wide field. The investigation of the terrible disease known as sleeping sickness has unhappily been marked by the tragic death of Lieut. Tulloch, who has fallen a victim to his zeal in studying the disease in Uganda. Vigorous efforts are being undertaken to discover some therapeutic remedy for the malady. In the case of Malta fever, too, the investigation of which was entrusted to the Royal Society by the Colonial Office, good progress has been made. It has been ascertained by the society's commission in Malta that the main source of propagation is the milk of infected goats. When this discovery was made the authorities of the island were at once warned of the danger in the milk supply, and the necessary precautions were taken. Since then the number of cases of fever in the hospitals has so greatly diminished as to afford good hope that this disease, which has been so great a scourge in Malta, may ere long be reduced to insignificant proportions or altogether exterminated.

I observe that a movement has been started in this country in aid of the Greek Anti-malaria League. Prof. Ronald Ross, than whom there is no higher authority, bears witness to the unexpected prevalence of the infection in most of the localities examined, and he is confident that practical results of the highest value would follow expenditure in combating the disease on lines already laid down. Although I speak only from general knowledge, I cannot let this opportunity pass without emphasising my sense of the enormous importance of this class of work. If men knew where their real interests lie, our efforts in this direction would be doubled or quadrupled. In this way discoveries, which the future will certainly bring, might be accelerated by decades, giving health and life to thousands or millions who now succumb. Willing and competent workers would soon offer themselves; the principal obstacle is the want of means.

The preparation of the "Royal Society Catalogue of Scientific Papers" for the remaining portion of the nineteenth century, which has proved a task so much more gigantic than can have been contemplated by the originators of the catalogue nearly half a century ago, has been actively pushed forward. In consequence of the increased expenditure, now at the rate of nearly 2000*l.* a year, the funds available are again approaching exhaustion. The difficulties of the president and council and of the catalogue committee on this subject have once more been promptly resolved by the action of our fellow, Dr. Ludwig Mond, who, after consultation with the officers, has again made himself responsible for a further subsidy amounting to 2000*l.* a year for three years. It is hoped that with the balance in hand and other sources of income, including the Handley fund of the Royal Society, the income of which is devoted to this purpose, this subvention will suffice for the preparation of the work and for passing it through the press. Since the Royal Society took this great national task in hand, there has already been spent on it more than 23,500*l.*, while on each occasion of financial stress Dr. Mond has come forward with the means of relief, his direct contributions, including that just promised, now amounting in the aggregate to 14,000*l.* This great work when published will thus be a tangible memorial of Dr. Mond's practical insistence on the importance of adequate indexes of the vastly increasing literature of science.

Of the activities working under the Royal Society, the one with which I have been especially connected is the National Physical Laboratory. As the result of a memorial to the Chancellor of the Exchequer, signed by about 150 Members of Parliament, the grant for building and equipment for the year was increased from 5000*l.* to 10,000*l.*, and this has enabled the committee to take in hand some urgently needed extension.

Buildings are now in course of erection for metrology and for metallurgical chemistry, while the engineering laboratory is being doubled in area. The two last additions were called for in great measure in consequence of an arrangement with the India Office whereby the testing work required for the Indian Government, hitherto carried on at Coopers Hill, is to be transferred to the laboratory. The Indian Government provide the testing machine and other appliances required for the work, and, in addition, have intimated their intention of placing in the charge of the committee the very admirable electrical equipment now at Coopers Hill.

Towards the equipment of the metallurgical laboratory the Goldsmiths' Company have made a very generous donation of 1000*l.*, while the Governments of New Zealand and Western Australia have contributed 100*l.* each to the equipment of the metrological laboratory.

A question of importance has arisen as to the performance at the laboratory of tests, partaking of a routine character, on the physical and mechanical properties of specimens of material. To this objection has been taken on the ground of competition with the work of private establishments. In one of its aspects the question is financial. But the executive committee are of opinion that, even if the pecuniary loss were recouped, the efficiency of the laboratory would suffer from the abandonment of this work. While anything like unfair competition with private establishments should be avoided, the execution of tests is good practice for the staff, and tends to keep them in touch with the manufacturers and with the practical problems which may demand examination. In view of the difference of opinion that has manifested itself, the Treasury has decided to appoint a small committee to inquire into the working of the laboratory, with a special reference to this question.

On a former occasion, my distinguished predecessor, Sir William Huggins, directed attention to some of the more important matters on which the society in the past had initiated, supported or given advice about scientific questions in connection with the State, and in other ways had made its influence felt strongly for the good of the country. It would hardly become me, with my short experience of the working of the society, at least in recent years, to pursue this theme. The function of the society which lies most open to the observation of an incoming president is that exercised at the ordinary meetings. I am impressed with the difficulty, arising out of the ever-increasing specialisation of science, in rendering really useful the reading of papers and discussions thereupon. It is, of course, felt more severely in a society like our own, which embraces within its scope the whole scientific field. It not infrequently happens that a paper is addressed to an audience among whom there is no one competent to follow the detailed observations and reasonings of the author. I am sometimes reminded of a saying of Dalton's on similar occasions at Manchester, quoted by Sir Henry Roscoe in his genial and entertaining "Reminiscences":—"Well, this is a very interesting paper for those that take any interest in it." A little more discretion on the part of readers of papers in having regard to the composition of their actual audience would be helpful here. In some cases experimental illustration would bring home to a larger number what is followed with difficulty from a merely verbal statement. But I am afraid that no complete remedy is within reach.

Increase of specialisation, however inconvenient in some of its aspects, is, I suppose, a necessary condition of progress. Sometimes a big discovery, or the opening up of a new point of view, may supersede detail and bring unity where before there was diversity, but this does not suffice to compensate the general tendency. Even in mathematics, where an outsider would probably expect a considerable degree of homogeneity, the movement towards diversity is very manifest. Those who, like myself, are interested principally in certain departments, and can look back over some forty years, view the present situation with feelings not unmixed. It is disagreeable to be left too far behind. Much of the activity now displayed has, indeed, taken a channel somewhat remote from the special interests of a physicist, being rather philosophical in its character than scientific in the ordinary sense. Much effort is directed towards strengthening the foundations upon which mathematical reasoning rests. No one can deny that this is a laudable endeavour, but it tends to lead us into fields which have little more relation to natural science than has general metaphysics. One may suspect that when all is done fundamental difficulties will still remain to trouble the souls of our successors. Closely connected is the demand for greater rigour of demonstration. Here I touch upon a rather delicate question, as to which pure mathematicians and physicists are likely to differ. However desirable it may be in itself, the pursuit of rigour appears sometimes to the physicist to lead us away from the high road of progress. He is apt to be impatient of criticism whose object seems to be rather to pick holes than to illuminate. Is there really any standard of rigour independent of the innate faculties and habitudes of the particular mind? May not an argument be rigorous enough to convince legitimately one thoroughly imbued with certain images clearly formed, and yet appear hazardous or even irrelevant to another exercised in a different order of ideas? Merely as an example, there are theorems known as "existence-theorems" having physical interpretations, the object of which is to prove formally what to many minds can be no clearer afterwards than it was before. The pure mathematician will reply that, even if this be so, the introduction of electrical or thermal ideas into an analytical question is illogical, and from his own point of view he is, of course, quite right. What is rather surprising is that the analytical argument should so often take forms which seem to have little relation to the intuition of the physicist. Possibly a better approach to a reconciliation may come in the future. In the meantime we must be content to allow the two methods to stand side by side, and it will be well if each party can admit that there is something of value to be learned from the point of view of the other.

In other branches, at any rate, the physicist has drawn immense advantage from the labours of the pure analyst. I may refer especially to the general theory of the complex variable and to the special methods which have been invented for applying it to particular problems. The rigorous solution by Sommerfeld of a famous problem in diffraction, approximately treated by Fresnel, is a case in point. We have moved a long way from the time when it was possible for the highest authority in theoretical optics to protest that he saw no validity in Fresnel's interpretation of the imaginary which presents itself in the expression for the amplitude of reflected light when the angle of incidence exceeds the critical value. In this connection it is interesting to remember that, in his correspondence with Young, Laplace expressed the opinion that the theoretical treatment of reflection was beyond the powers of analysis. The obvious moral is that we are not to despair of the eventual solution of difficulties that may be too much for ourselves.

As more impartially situated than some, I may, perhaps, venture to say that in my opinion many who work entirely upon the experimental side of science underrate their obligations to the theorist and the mathematician. Without the critical and coordinating labours of the latter, we should probably be floundering in a bog of imperfectly formulated and often contradictory opinions. Even as it is, some branches can hardly escape reproaches of the kind suggested. I shall not be supposed, I hope, to undervalue the labours of the experimenter. The courage and perseverance demanded by much work of this nature is beyond all praise; and success often depends upon what seems like a natural instinct for the truth—one of the rarest of gifts.

Copley Medal.

The Copley medal is awarded to Prof. Elias Metchnikoff, For.Mem.R.S., on the ground of his distinguished services to zoology and to pathology, particularly for his observations on the development of invertebrates and an phagocytosis and immunity. From 1866 to 1882 Prof. Metchnikoff's work was exclusively zoological, and mainly during that period he produced a series of brilliant memoirs dealing with the early development and metamorphoses of invertebrates.

Although his name stands in the first rank of investigators of these subjects, the most celebrated of his discoveries are those relating to the important part played by wandering mesoderm cells and white blood-corpuscles in the atrophy of larval organs, and in the defence of the organism against infection by bacteria and protozoa. It was on these researches that he based his well-known "phagocyte theory." Metchnikoff's fundamental observations were made in Messina in 1882, and were published in the following year. In these he showed that the absorption and disappearance of the embryonic organs of echinoderms were effected by wandering mesoderm cells, which devoured and digested the structures which had served their purpose and become effete. The observation that white blood-cells accumulate in an inflamed area after infection by bacteria suggested that these cells might also devour and thus destroy the invading microbes, and that the process of inflammation was really a physiological and protective reaction of the organism against infection. The study of the infection of Daphnia by *Monospora bicuspidata* entirely justified this prediction. The account of the phenomena of infection as seen in this transparent crustacean was published in Virchow's *Archiv* (vol. xcvi.) in 1884, while, later in the same year, Metchnikoff published another paper extending these observations to vertebrates, and showing the universal applicability of his generalisation as to the essential character of the inflammatory process.

During the twenty years which have elapsed since the publication of the "phagocyte theory," Metchnikoff, with the assistance of a host of pupils and disciples from all parts of the world, has been continuously engaged in the study of the reaction of the organism against infection, and in investigating the essential features of immunity in the light of the illuminating generalisation laid down in 1884.

Though of limited range, and therefore inferior in scientific importance to the more fundamental researches carried out by him previously, Metchnikoff's recent work on infection by the microorganism of syphilis and the attainment of protection and immunity against this disease may be mentioned on account of its important practical applications.

It is not too much to say that the work of Metchnikoff has furnished the most fertile conception in modern pathology, and has determined the whole direction of this science during the last two decades.

Rumford Medal.

The Rumford medal is awarded to Prof. Hugh Longbourne Callendar, F.R.S., for his experimental work on heat.

Prof. Callendar has devoted his attention chiefly to the improvement of accurate measurement in the science of heat by the application of electrical methods. His first paper, "On the Practical Measurement of Temperature," Phil. Trans., 1887, paved the way for the application of the electrical resistance thermometer to scientific investigation. In a later paper, written in conjunction with

Griffiths, "On the Boiling Point of Sulphur, &c.," Phil. Trans., 1891, the application of his method was further extended, and a simple method of standardisation was proposed. In continuation of this work Prof. Callendar has written a number of subsidiary papers dealing with details of construction of instruments, and applications to special purposes. The results of this thermometric work have since been confirmed by Chappuis and Harker, Phil. Trans., 1889, at the Bureau International, Paris, and by other observers, and are now generally accepted.

More recent developments in accurate electrical thermometry have been described by Prof. Callendar in later papers. He has also devised a special type of "gas-resistance" thermometer, depending on the increase of viscosity of a gas with temperature, which is the exact analogue of the electrical resistance thermometer, and possesses peculiar advantages for high temperature measurements.

The application of electrical resistance thermometers and thermo-couples to the observation of rapid variations of temperature has been utilised by Prof. Callendar in the study of the adiabatic expansion of gases and vapours, and in the observations of the cyclical changes of temperature of the steam and of the cylinder walls in a steam-engine. The latter research was undertaken in conjunction with Prof. Nicholson, with a view to elucidate the theory of cylinder-condensation.

The researches of Rowland and other experimentalists on the specific heat of water and the mechanical equivalent of heat had shown that grave uncertainties affected the value of this most fundamental physical constant, which could not be removed satisfactorily without a complete investigation of the variation of the specific heat of water between 0° C. and 100° C. Prof. Callendar devised a continuous electrical method of attacking this problem, possessing many important advantages as compared with older methods. He was assisted by Dr. Barnes in carrying out this work, the results of which form the subject of papers by Callendar and Barnes in the Phil. Trans. Roy. Soc., 1901. As an illustration of the probable accuracy of their results it may be observed that, whereas by any of the older formulæ accepted for the variation of the specific heat of water, the values of Rowland and of Reynolds and Moorby for the mechanical equivalent are seriously discordant, they are brought into perfect agreement by the work of Callendar and Barnes.

In the subject of conduction of heat Prof. Callendar has contributed many original methods described in various minor papers, and, in addition to the thermal investigations with which his name is chiefly associated, has carried out some purely electrical researches.

Royal Medals.

One of the Royal medals has been awarded, with the approval of His Majesty, to Prof. Alfred George Greenhill, a fellow of the society, on account of the number and importance of his mathematical investigations produced between the year 1876 and the present time. They embrace a variety of mechanical and physical subjects, including dynamics, hydromechanics, electricity, and gunnery. He is the author of two treatises on hydromechanics, both remarkable for originality of treatment.

The subject, however, to which he has devoted most time and attention is the theory of elliptic functions. His work on this subject may be placed in two classes:—(1) Investigations in which he has extended the subject into new fields, as in the series of memoirs on the "Transformation and Complex Multiplication of Elliptic Functions," contributed to the Proceedings of the London Mathematical Society (vols. xix., xxi., xxv., xxvii.), and in the memoir on the "Third Elliptic Integral and the Ellipsotomic Problem," in the Phil. Trans. (vol. cciii.). (2) Applications to mechanical problems, mainly dynamical, for purposes of calculation or illustration. In this class may be placed his treatise on the elliptic functions, as well as numerous papers in journals and the proceedings of scientific societies.

All Prof. Greenhill's work is characterised by much originality, and by a rare power and skill in algebraic analysis.

His Majesty has also approved the award of a Royal medal to Dr. Dukinfield Henry Scott, also a fellow of the society, for his investigations and discoveries in connection with the structure and relationship of fossil plants. Dr. Scott began the very important work which he has accomplished in this subject by helping the late distinguished palæobotanist, Prof. W. C. Williamson. In this cooperation he greatly enhanced the value of Williamson's work. He not only added many new discoveries, but, what was more important, demonstrated the value of the work in relation to phylogeny.

Dr. Scott has since added much of first-rate importance. He has discovered and elucidated many important types, his work constituting a most valuable acquisition to botany from the evolutionary point of view. It is not only in the accurate investigation of difficult structures that Dr. Scott has been so successful; not the least of his merits lies in the philosophical treatment of the problems suggested by his discoveries. His position as one of the leading palæobotanists in the world is well recognised. He has, both by his personality and by his writings, exercised a well-marked and widespread influence on the work of other botanists. The fact that he has created in this country a vigorous school of palæobotanists may be regarded as an additional claim for the honour now conferred upon him.

Davy Medal.

The Davy medal is given to Prof. Rudolf Fittig, professor of chemistry in the University of Strassburg, who began to publish scientific work as early as 1858, and in 1864 discovered the method for the synthesis of hydrocarbons homologous with benzene, which has ever since borne his name. Up to about 1880 he worked chiefly on benzene derivatives, but his attention was gradually attracted to the study of lactones and acids, both saturated and unsaturated, which has largely formed the subject of his numerous published papers down to the present day.

Fittig has been a remarkably active worker. The Royal Society Catalogue contains under his name alone ninety-six papers, and, jointly with students and others, seventy-one more down to 1883. Since that time a number about equally large has been recorded in the indexes of the chemical journals. The work of Fittig and his students on lactones and acids, and particularly the intermolecular changes which many unsaturated acids undergo, may be said to be classical, and it has had an important influence on the progress of theoretical chemistry.

Darwin Medal.

The Darwin medal has been awarded to Prof. Hugo de Vries, For.Mem.R.S. Prof. de Vries has made a series of important discoveries in connection with the manner in which new races of organisms may originate, and he has materially extended and systematised our knowledge of the laws affecting the results of hybridisation. His work is the outcome of very extensive experiments that have been carried on for many years. He has stimulated numerous investigators, both in Europe and in America, to extend these inquiries, and the results already obtained are of great importance, both from a theoretical and from a practical point of view. De Vries's work has exercised considerable influence on other branches of biology, and has suggested new lines of investigation in many directions.

Hughes Medal.

Mrs. W. E. Ayrton is the recipient of the Hughes medal, which is awarded for original discovery in physical sciences, particularly electricity and magnetism, or their applications. Her work on the electric arc has been described in a paper published in the Philosophical Transactions, and in various other publications.

Mrs. Ayrton's investigations cover a wide area. She discovered the laws connecting the potential difference between the carbons of an arc with the current and with the distance between them, and proved these to apply, not only to her own experimental results, but to all the published results of previous observers. Dealing with the modifications introduced into the arc by the use of cores in the carbons, she found the causes of these modifications. The peculiar distribution of potential through the arc was traced, and its laws were discovered by her.

Having found the conditions necessary for maintaining a steady arc, and for using the power supplied to it most efficiently, she was able to explain the cause of "hissing," and the causes of certain anomalies in the lighting power of the arc.

For the past four years Mrs. Ayrton has been engaged in investigating the causes of the formation of sand ripples on the seashore.

At the annual dinner, the Norwegian Minister, Dr. F. Nansen, proposed the toast of the Royal Society, and Sir William Huggins responded to it. Speeches were also made by Prof. Hugo de Vries, Prof. Callendar, Lord Kelvin, and the Italian Ambassador. In the course of his remarks, Dr. Nansen said:—

> Ibsen, my great compatriot, has in one of his works formulated the paradox that the man is strongest who stands most alone. There is certainly some truth in this—nay, there is much truth in it so far as science is concerned. The man who, in the search for truth, goes his own way independently of other men and of other considerations, is certainly the man who is apt to find the greatest and most valuable truth. On the other hand, it is also true that science, more than most other things in life, depends on cooperation, on the help of one's fellow-beings, and this becomes more and more true every day. Many people are apt to forget what science actually is, and what they owe to science, for it is through science that modern society actually exists, and the development of society as it is to-day would be impossible if science were eliminated. Humanity is growing, but if science and the means created by science are not growing humanity certainly will have to look forward to a very miserable future. Therefore the nation that wishes to be cared for must support science and those who carry on scientific work. . . . Science will live her own life, and has done so ever since the days when Prometheus made his fatal expedition to the gods and stole the fire which is more or less burning in every one of us, and cannot be extinguished. There is something sublime in this everlasting fire of science. Generation after generation disappear; the individual is nothing, but always "Watchful in the tower man shall remain in sleepless contemplation."

NOTES.

WE regret to have to record the death of Sir Edward J. Reed, K.C.B., F.R.S., on November 30, at seventy-six years of age.

IT is announced that this year's Nobel prize for chemistry has been awarded to Prof. H. Moissan, and the prize for physics to Prof. J. J. Thomson, F.R.S. The prize for medicine has been awarded to Prof. C. Golgi, of Pavia, and Prof. Ramón y Cajal, of Madrid.

THE Physical Society will hold an exhibition of electrical, optical, and other physical apparatus at the Royal College of Science, South Kensington, on Friday evening, December 14. Admission will be by ticket only.

IT is announced that Prof. Gariel has resigned the secretaryship of the council of the French Association for the Advancement of Sciences after having performed the duties for about thirty years.

IT is reported from Bombay that experiments in wireless telegraphy carried out between Landi Kotal and Peshawar have demonstrated the fact that the interposition of higher mountains does not interfere with free communication between two places in a mountainous country.

A JOINT committee has been formed of the county councils of the East and West Ridings of Yorkshire and the county boroughs of Bradford, Hull, Leeds, Rotherham, and Sheffield, to carry out an investigation as to the conditions of the milk supply of the district. The investigation is to be continued for twelve months, and the committee will shortly appoint a bacteriologist to make the necessary examination of samples of milk taken at various stages of transit to the consumer.

THE annual meeting of the German Society of Naval Architects was held in Berlin on November 22 in the presence of the German Emperor. A paper was read by Mr. Boveri on the Parsons marine turbine, in which he gave an account of steam-turbine trials in the German Navy. In the discussion that ensued it was urged that steam turbines possess various disadvantages. They render a ship less easy to steer and control; they are more complicated than ordinary engines; and, above all, they are 60 per cent to 80 per cent. more costly. Notwithstanding these considerations, the large cruiser which is to be laid down next year will be fitted with steam turbines.

No work in medicine is of much use unless it is in living union with the study of the natural history of disease. This was the position taken by Sir Thomas Barlow in the course of some remarks made in opening, on November 28, a new Manchester and Salford Hospital for Skin Diseases. It is only when this purpose is kept in view that any solid advance can be made; it is only by trying to find out the causes and conditions under which diseases come, and by investigating their natural evolution, that real advance can be secured. In devoting a room to study and research, and in fitting it up with modern appliances, the committee of the new hospital has done something to stamp out quackery. In connection with skin disease, English people are very benevolent, but they have not yet learnt, as the people across the Atlantic have learnt, to give money for research; they give plenty of money for asylums and for hospitals, but for research which carries on the study of disease and advances knowledge on sound and progressive lines, that is one of the things which they, practical people as they are, have not yet realised.

THE following are among the lecture arrangements at the Royal Institution before Easter:—Mr. W. Duddell, a Christmas course of six experimentally illustrated lectures on Signalling to a Distance; from Primitive Man to Radiotelegraphy," adapted to a juvenile auditory; Prof. Percy Gardner, two lectures on the sculpture of Aegina in relation to recent discovery; Prof. A. C. Seward, two lectures on survivals from the past in the plant world; Prof. W. Stirling, six lectures on the visual apparatus of man and animals; Dr. W. N. Shaw, two lectures on recent advances in the exploration of the atmosphere; Major P. A. MacMahon, two lectures on the standards of weights and measures; Prof. W. W. Watts, two lectures on (1) the building of Britain, (2) recent light on ancient physiographies; Dr. C. W. Saleeby, two lectures on biology and progress; and Prof. J. J. Thomson, six lectures on Röntgen, kathode, and positive rays. The Friday evening meetings will commence on January 18, when Sir Andrew Noble will deliver a discourse on fifty years of explosives. Succeeding discourses will probably be given by Sir Almroth E. Wright, Mr. J. J. Lister, Mr. Dugald Clerk, Prof. D. J. Hamilton, Prof. J. J. Thomson, and Prof. G. Lunge.

AT a recent meeting of the Royal Photographic Society Mr. Thomas Manly described and illustrated his modification of carbon printing, "ozobrome," which is rapidly gaining appreciation. The chief advantage of the new method is that carbon prints can be made without any exposure to light if a "bromide" print of the subject is available. The reduction of the bichromate in the carbon